

August 2015 Regional Climate Summary

For the San Francisco Bay Area and Monterey Bay Area

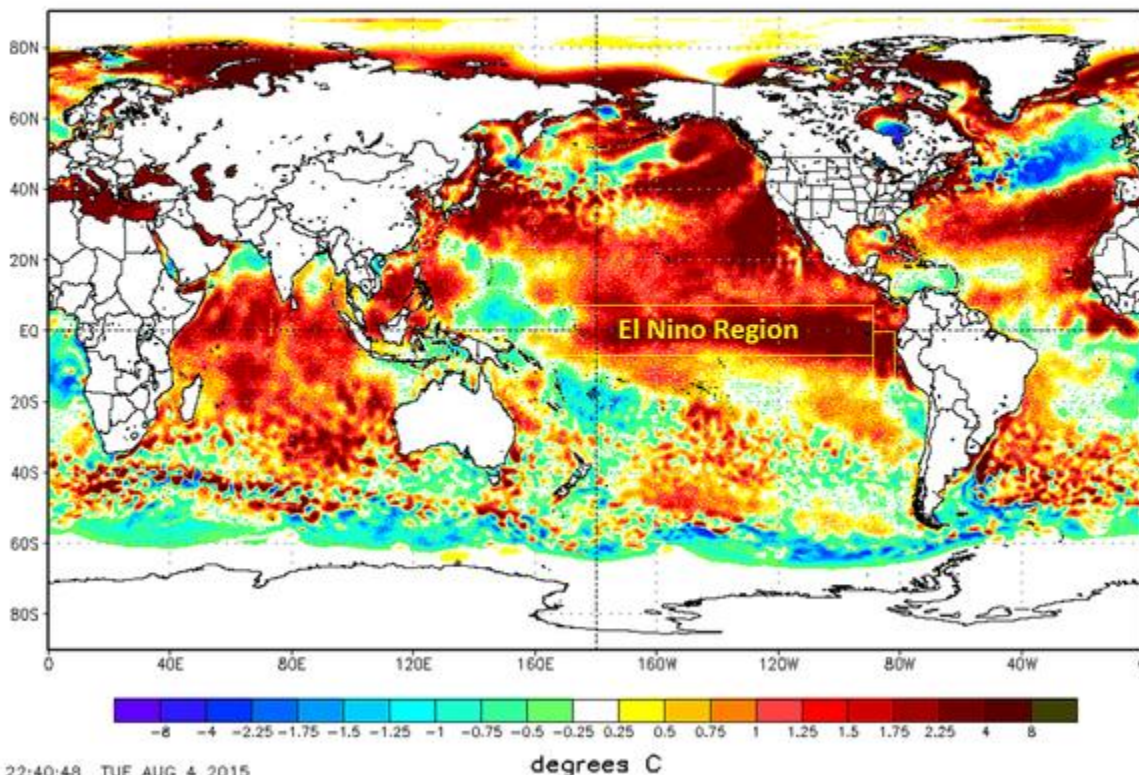
August 2015 was a warm month, due in large part to persistent warmer than normal water temperatures along the California Coast. A dozen climate stations reported their warmest August on record. Downtown San Francisco, with over 140 years of temperature records, had its second warmest average August temperature, and its warmest average August minimum temperature. There were two precipitation events in August, bringing scattered light amounts of rainfall to the region.

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After peaking near record territory in July, sea surface temperatures off the northern and central California coast remained warm into August. By August 4, the water temperature at the Monterey Bay Buoy had reached 67 deg F, the warmest water temperature recorded at this buoy during the month of August (previous August record was 66 degrees on August 25, 2014).

The waters off our coast were not the only region experiencing warmer than normal sea surface temperatures (SSTs) in early August. The map below shows sea surface temperature anomalies across the globe as of August 4th. Much of the northern and central Pacific Ocean was warmer than normal. Much warmer than normal SSTs extended well off the coast of California and covered much of the Gulf of Alaska and waters off the coast of the Pacific Northwest. In addition, much warmer SSTs were being observed across the central and eastern equatorial Pacific which was associated with the developing strong El Niño.

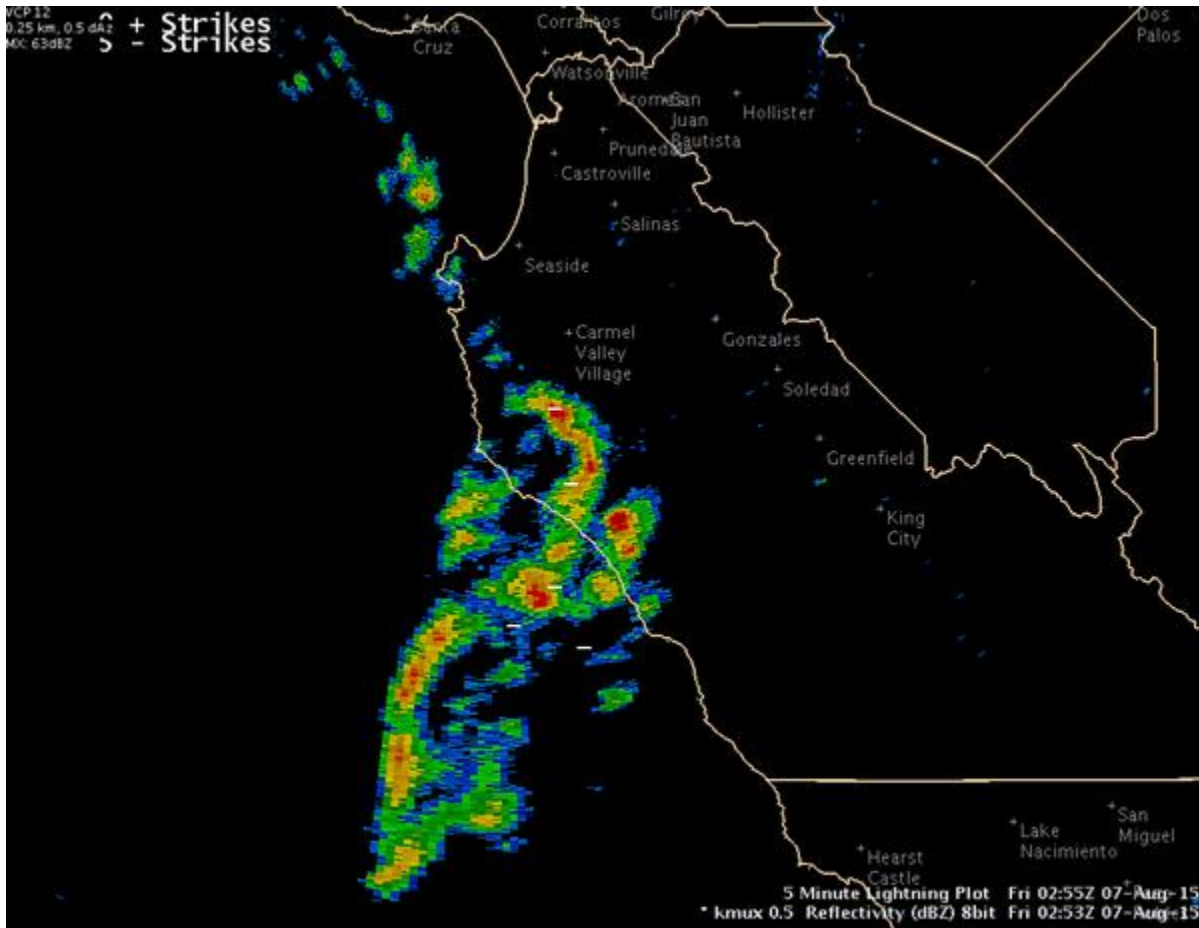
NOAA/NWS/NCEP/EMC Marine Modeling and Analysis Branch Oper H.R.
RTG_SST_HR Anomaly (0.083 deg X 0.083 deg) for 04 Aug 2015



22:40:48 TUE AUG 4 2015

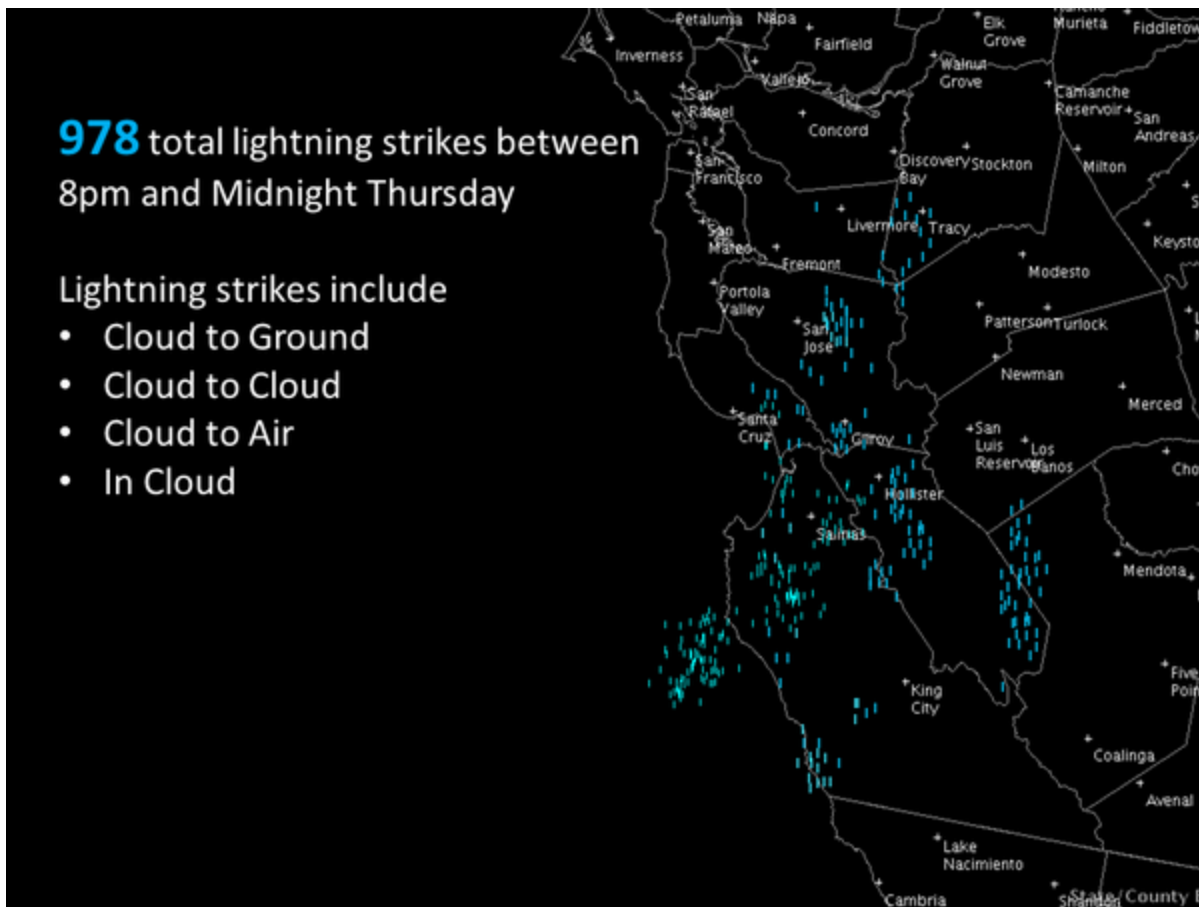
Map depicting sea surface temperature anomalies as of August 4, 2015

On Thursday, August 6, a weak upper low offshore tapped into subtropical moisture and brought that moisture northward into Central California. During the evening of the 6th scattered thunderstorms developed over western Monterey county, over Monterey Bay and off the Big Sur Coast.



Radar image at 7:53 pm on August 6, showing scattered thunderstorms near the Monterey County Coast.

These thunderstorms continued to move to the north and east during the remainder of the evening. By midnight over 900 lightning strikes had been detected across the region including the counties of Monterey, San Benito, Santa Cruz, Santa Clara and Alameda.



Map depicting lightning strikes that occurred during the evening of Thursday, August 6.

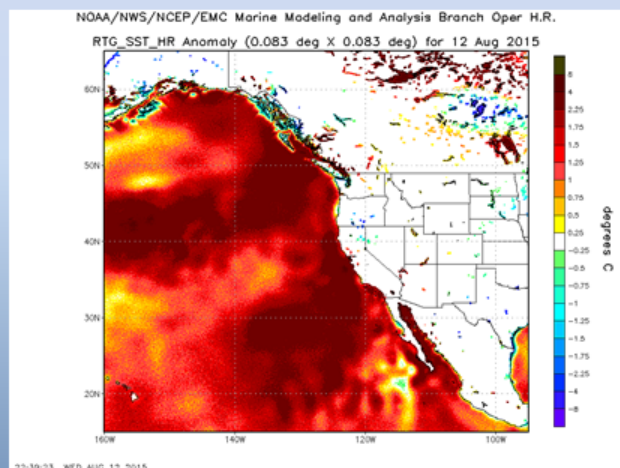


Photo of a lightning strike along the Monterey County Coast on the evening of August 6. Photo credit: Brandon Erdman

By Wednesday, August 12, sea surface temperatures off our coast had climbed to new heights. At 2 pm that afternoon the Monterey Bay Buoy recorded a water temperature of 69 degrees F. This was the warmest water temperature recorded at this buoy since its inception in 1987.

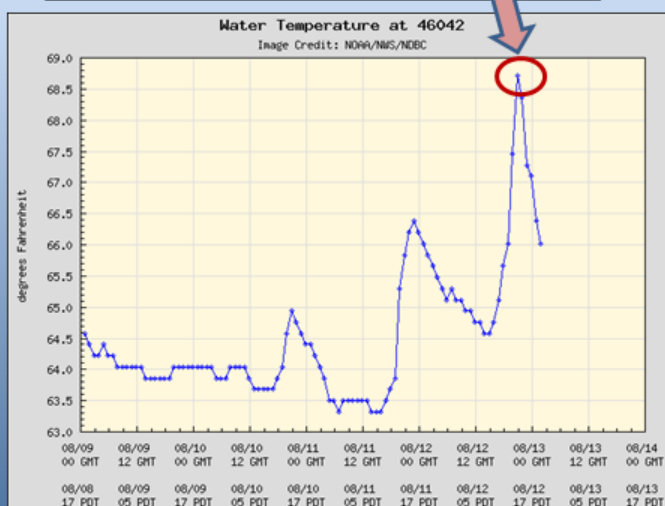
Water Temp at Monterey Bay Buoy Reaches New High

At 2 pm PDT Wednesday, August 12, the water temperature at buoy 46042 (Monterey Bay Buoy) reached 69 degrees F., the warmest water temperature this buoy has recorded since its inception in 1987. The previous record warm water temperature of 68 degrees F. occurred on July 23, 2014.



This map shows sea surface temperature (SST) anomalies over the NE Pacific today. Notice the area of much warmer than normal SSTs off the CA Coast and in general over the NE Pacific.

Graph showing water temperature at buoy 46042, peaking at 69 deg. F at 2 pm on Wednesday, August 12



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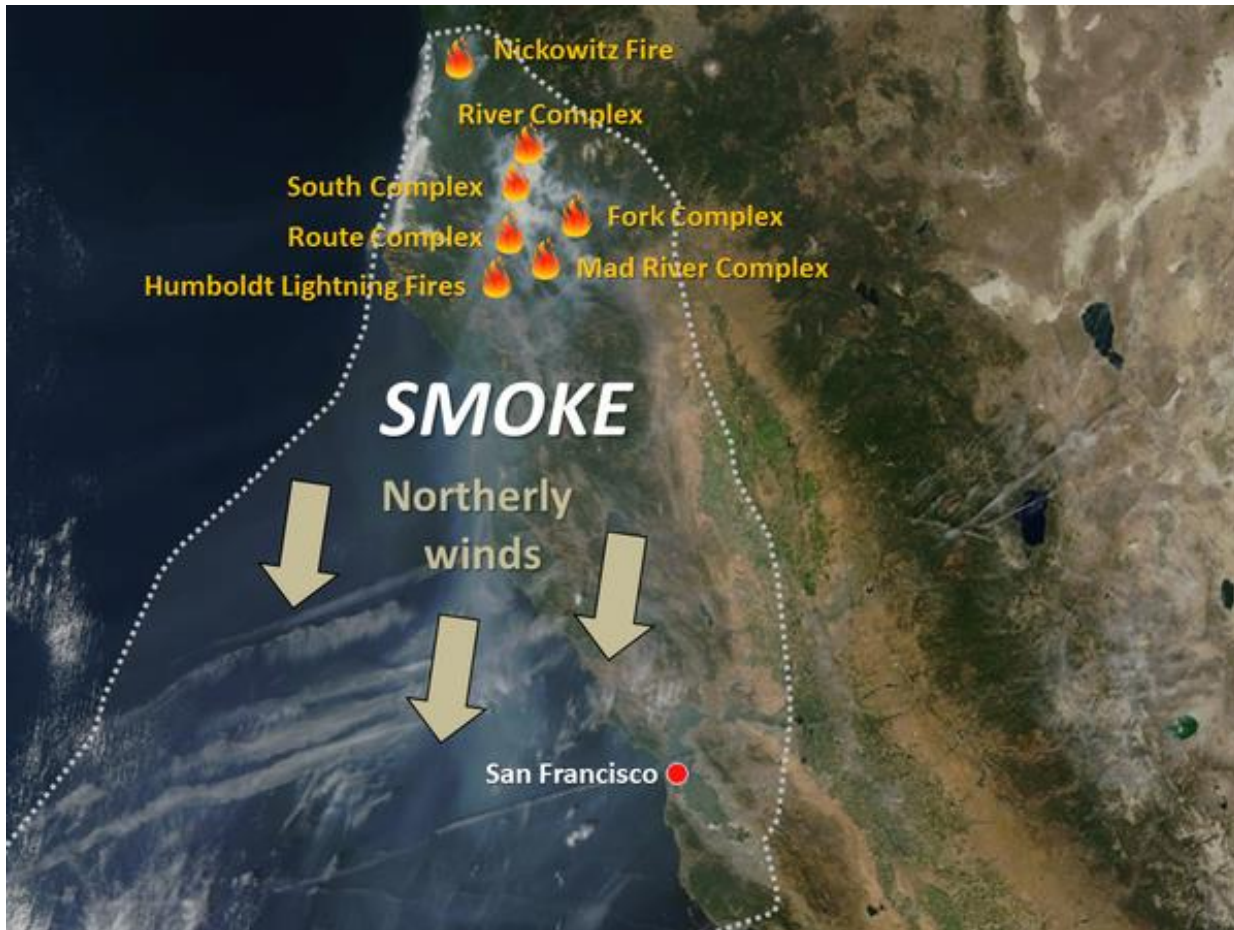
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Social media graphic with information on the record warm water temperature at the Monterey Bay Buoy on August 12.

Northerly winds developed across northern and central California on Saturday, August 15. Smoke from large wildfires burning across northwest California was swept south into the San Francisco Bay Area on the 15th.



Satellite image showing smoke from several wildfires across northwest California being pushed south across the San Francisco Bay Area on August 15.

These same northerly winds brought a dry airmass into the region, allowing temperatures to warm into record territory on August 15. Seven daily record high temperatures were set or tied across the San Francisco and Monterey Bay Areas on the 15th.

Saturday's Record Heat

Seven daily high temperature records were set or tied across the San Francisco Bay Area and North-Central Coast on Saturday, August 15:

| Location | Saturday's High | Previous Record |
|--------------------------|-----------------|-----------------|
| Santa Cruz | 101 | 88 in 2013 |
| Moffett Federal Airfield | 95 | 91 in 1950 |
| Oakland Museum | 93 | 87 in 1983 |
| Salinas Airport | 93 (tie) | 93 in 1950 |
| San Francisco Airport | 92 | 90 in 1950 |
| Salinas | 91 | 85 in 1983 |
| Monterey | 90 | 85 in 1950 |

This heat event is forecast to continue into Sunday when more record high temperatures are likely. A gradual cooling trend will begin on Monday and last through much of next week.

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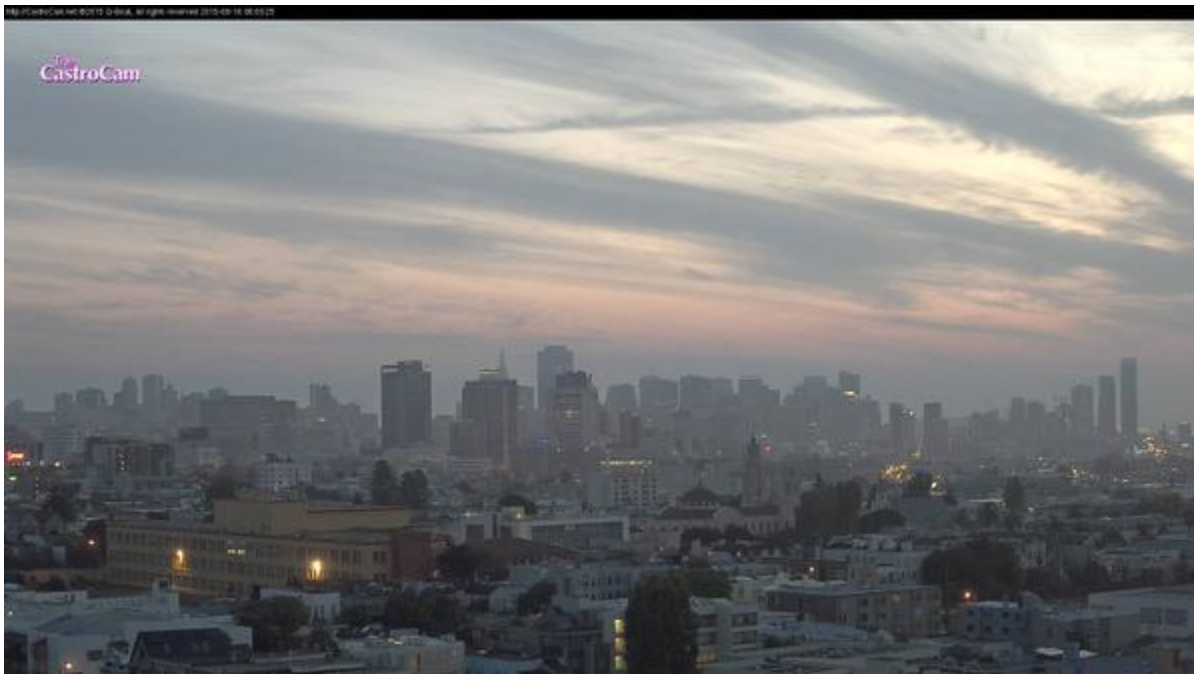
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Social media graphic showing record highs on August 15.

Smoky conditions persisted across the Bay Area into Sunday, August 16.



San Francisco "CastroCam" showing smoky conditions in San Francisco on August 16.



Smoky sunset from Ocean Beach in San Francisco on August 16

Very warm conditions continued on August 16, when 14 daily high temperature records were set, including 104 in both Napa and King City and a 107 in Gilroy.

One more brief heat event occurred near the end of August. But only one record high temperature was set – 107 at King City on August 28.

A cold front swept through northern California on the morning of Saturday, August 29. This front dropped locally more than an inch of rain across far northwest California. The southern edge of the front clipped the San Francisco Bay Area that morning and produced light rain at several North and East Bay Locations. Up to 0.20 inches fell in the North Bay (at Muir Woods) and up to 0.15" fell locally in the East Bay Hills.

August Temperatures

August was a warm month, especially in locations at or near the coast. Continued warmer than normal sea surface temperatures near the coast helped elevated temperatures into record warm territory, especially during the overnight hours. ***A dozen climate stations reported their warmest August on record:***

| Location | August '14 Average Temperature* | Normal August Avg Temp | Departure from Normal | Previous record warm average temp in Aug. and year |
|-----------------------|---------------------------------|------------------------|-----------------------|----------------------------------------------------|
| Kentfield | 70.8 | 67.7 | +3.1 | 70.2 in 1990 |
| San Rafael | 71.1 | 67.5 | +3.6 | 70.9 in 1999 |
| Berkeley | 67.7 | 64.1 | +3.6 | 67.2 in 2003 |
| Half Moon Bay | 65.1 | 59.2 | +5.9 | 63.2 in 2014 |
| Redwood City | 71.4 | 68.6 | +2.8 | 70.8 in 1983 |
| San Francisco Airport | 68.0 | 64.5 | +3.5 | 67.3 in 1993 |
| Oakland Airport | 68.7 | 64.1 | +4.6 | 67.1 in 1983 |
| Richmond | 68.4 | 64.0 | +4.3 | 66.3 in 2003 |
| Santa Cruz | 70.9 | 65.3 | +5.6 | 67.9 in 2014 |
| Watsonville | 68.9 | 63.2 | +5.6 | 67.5 in 1983 |
| Monterey | 65.5 | 60.4 | +5.1 | 64.4 in 1983 |
| King City | 71.8 | 69.4 | +2.4 | 71.5 in 1927 |

* Average Temperature = (Average High Temperature + Average Low Temperature) / 2

In addition, seven climate stations reported their second warmest August average temperature including Napa, Petaluma Airport, San Francisco Downtown, Newark, Oakland Museum, Salinas, and Salinas Airport.

Finally, several climate stations recorded their warmest average monthly overnight low temperature for the August, including San Francisco Downtown. Not only did the average monthly low temperature in San Francisco set a record for being the warmest, but **individual daily low temperatures on a remarkable 15 of 31 August days were either the warmest on record or tied for the warmest.**

August Regional Temperature Summary

| Location | Average High | Normal High | Departure from Normal | Average Low | Normal Low | Departure from Normal |
|--------------------------------|--------------|-------------|-----------------------|-------------|------------|-----------------------|
| North Bay | | | | | | |
| Angwin | 84.1 | 85.5 | -1.4 | 54.7 | 54.3 | 0.4 |
| Calistoga | 89.5 | 90.7 | -1.2 | 56.0 | 52.1 | 3.9 |
| Kentfield | 84.5 | 82.3 | 2.2 | 57.0 | 53.1 | 3.9 |
| Napa | 86.6 | 83.0 | 3.6 | 57.5 | 55.0 | 2.5 |
| Napa Airport | 82.2 | 79.6 | 2.6 | 55.1 | 52.0 | 3.1 |
| Petaluma Airport | 82.9 | 81.9 | 1.0 | 56.9 | 52.6 | 4.3 |
| San Rafael | 83.4 | 79.7 | 3.7 | 58.8 | 55.2 | 3.6 |
| Sonoma County Airport | 85.1 | 83.3 | 1.8 | 54.9 | 51.1 | 3.8 |
| Sonoma | 86.5 | 86.7 | -0.2 | 55.6 | 52.3 | 3.3 |
| San Francisco Peninsula | | | | | | |
| Half Moon Bay | 72.2 | 66.1 | 6.1 | 58.0 | 52.3 | 5.7 |
| Redwood City | 83.2 | 81.4 | 1.8 | 59.5 | 55.8 | 3.7 |
| San Francisco Airport | 75.6 | 72.7 | 2.9 | 60.4 | 56.3 | 4.1 |
| San Francisco Downtown | 71.8 | 68.1 | 3.7 | 60.2 | 55.1 | 5.1 |

| East Bay | Average High | Normal High | Departure from Normal | Average Low | Normal Low | Departure from Normal |
|-----------------------------------------|---------------------|--------------------|------------------------------|--------------------|-------------------|------------------------------|
| Antioch | 89.7 | 90.0 | -0.3 | 61.5 | 58.6 | 2.9 |
| Berkeley | 77.7 | 74.3 | 3.4 | 57.7 | 53.9 | 3.8 |
| Concord | 88.1 | 87.3 | 0.8 | 60.9 | 58.5 | 2.4 |
| Concord Airport | 87.7 | 87.2 | 0.5 | 61.8 | 57.5 | 4.3 |
| Fremont | 80.2 | 79.0 | 1.2 | 60.2 | 56.8 | 3.4 |
| Hayward Airport | 77.1 | 75.3 | 1.8 | 61.1 | 57.7 | 3.4 |
| Livermore | 88.3 | 88.4 | -0.1 | 58.9 | 56.7 | 2.2 |
| Livermore Airport | 89.6 | 87.3 | 2.3 | 62.1 | 57.4 | 4.7 |
| Martinez | 86.8 | 87.9 | -1.1 | 54.2 | 51.2 | 3.0 |
| Mount Diablo Junction | 80.1 | 84.7 | -4.6 | 58.8 | 59.7 | -1.2 |
| Newark | 78.5 | 77.4 | 1.1 | 61.4 | 58.4 | 3.0 |
| Oakland | 77.1 | 73.0 | 4.1 | 61.5 | 57.5 | 4.0 |
| Oakland Airport | 76.7 | 72.4 | 4.3 | 60.7 | 55.7 | 5.0 |
| Richmond | 76.3 | 72.0 | 4.3 | 60.4 | 56.0 | 4.4 |
| South Bay and Santa Cruz County | | | | | | |
| Gilroy | 89.7 | 87.8 | 1.9 | 54.5 | 54.6 | -0.1 |
| Moffett Federal Airfield | 79.7 | 77.3 | 2.4 | 61.4 | 59.2 | 2.2 |
| Mount Hamilton | 78.5 | 77.4 | 1.1 | 63.5 | 64.1 | -0.6 |
| San Jose | 81.7 | 81.9 | -0.2 | 60.8 | 58.3 | 2.5 |
| Santa Cruz | 84.0 | 76.2 | 7.8 | 57.7 | 54.3 | 3.4 |
| Watsonville | 78.0 | 72.3 | 5.7 | 59.7 | 54.1 | 5.6 |
| Watsonville Airport | 78.7 | 74.3 | 4.4 | 58.6 | 53.3 | 5.3 |
| Monterey and San Benito Counties | | | | | | |
| Big Sur Station | 80.1 | 77.3 | 2.8 | 52.8 | 50.0 | 2.8 |
| Carmel Valley | 82.3 | 79.8 | 2.5 | 53.9 | 50.1 | 2.8 |
| Hollister | 83.8 | 82.0 | 1.8 | 57.0 | 53.6 | 3.4 |
| King City | 88.0 | 85.7 | 2.3 | 55.5 | 53.0 | 2.5 |
| Monterey | 73.5 | 67.6 | 5.9 | 57.4 | 53.1 | 4.3 |
| Monterey Airport | 73.4 | 68.9 | 4.5 | 59.5 | 54.2 | 5.3 |
| Salinas | 77.9 | 72.5 | 5.4 | 57.6 | 54.0 | 3.6 |
| Salinas Airport | 76.7 | 72.1 | 4.6 | 60.0 | 55.7 | 4.3 |

| Daily Temperature Records for August 2014 | | | |
|-------------------------------------------|--------------------------|------------------|--------------------------|
| Date | Location | Record High Temp | Previous Record and Year |
| 8/15 | San Francisco Airport | 92 | 90 in 1950 |
| 8/15 | Oakland Museum | 93 | 87 in 1983 |
| 8/15 | Moffett Federal Airfield | 95 | 91 in 1950 |
| 8/15 | Monterey | 90 | 85 in 1950 |
| 8/15 | Santa Cruz | 101 | 88 in 2013 |
| 8/15 | Salinas | 91 | 85 in 1983 |
| 8/15 | Salinas Airport | 93 | 93 in 1950 |
| 8/16 | Kentfield | 101 | 100 in 1950 |
| 8/16 | San Rafael | 101 | 98 in 1963 |
| 8/16 | Napa | 104 | 100 in 1950 |
| 8/16 | San Francisco | 90 | 84 in 1994 |
| 8/16 | San Francisco Airport | 90 | 86 in 1960 |
| 8/16 | Oakland Museum | 92 | 84 in 1994 |
| 8/16 | Oakland Airport | 93 | 85 in 1960 |
| 8/16 | Richmond | 94 | 84 in 1963 |
| 8/16 | Mountain View | 97 | 85 in 1960 |
| 8/16 | San Jose | 97 | 93 in 2000 |
| 8/16 | Gilroy | 107 | 103 in 1996 |
| 8/16 | Monterey | 83 | 81 in 1966 |
| 8/16 | Salinas | 87 | 86 in 1966 |
| 8/16 | King City | 104 | 101 in 1933 |
| 8/17 | Moffett Federal Airfield | 85 | 85 in 1993 |
| 8/28 | King City | 107 | 104 in 2009 |

August Precipitation

The two precipitation events in August resulted in scattered light monthly rainfall totals across the region. Most climate stations ended the month with below normal monthly rainfall. A few locations, mostly in the Monterey Bay Area, accumulated above normal rainfall amounts.

August Regional Precipitation Summary:

| Location | August Rainfall | Normal Aug Rainfall | Percent of Normal |
|-----------------------|-----------------|---------------------|-------------------|
| North Bay | | | |
| Angwin | 0.00 | 0.06 | 0 |
| Calistoga | 0.03 | 0.05 | 60 |
| Kentfield | 0.00 | 0.06 | 0 |
| Muir Woods | 0.20 | 0.14 | 143 |
| Napa | 0.00 | 0.09 | 0 |
| Napa Airport | 0.01 | 0.03 | 33 |
| Petaluma | 0.00 | 0.06 | 0 |
| San Rafael | 0.00 | 0.05 | 0 |
| Sonoma County Airport | 0.03 | 0.08 | 38 |

| San Francisco Peninsula | August Rainfall | Normal Aug Rainfall | Percent of Normal |
|------------------------------------------|------------------------|----------------------------|--------------------------|
| Half Moon Bay | 0.08 | 0.22 | 36 |
| Redwood City | 0.00 | 0.05 | 0 |
| San Francisco Airport | 0.00 | 0.04 | 0 |
| San Francisco Downtown | 0.02 | 0.06 | 33 |
| East Bay | | | |
| Antioch | 0.00 | 0.02 | 0 |
| Berkeley | 0.00 | 0.06 | 0 |
| Concord | 0.00 | 0.03 | 0 |
| Concord Airport | 0.00 | 0.02 | 0 |
| Fremont | 0.01 | 0.04 | 25 |
| Hayward Airport | 0.01 | 0.04 | 25 |
| Livermore | 0.01 | 0.05 | 20 |
| Livermore Airport | 0.00 | 0.01 | 0 |
| Martinez | 0.00 | 0.05 | 0 |
| Newark | 0.00 | 0.03 | 0 |
| Oakland | 0.01 | 0.06 | 17 |
| Oakland Airport | 0.00 | 0.05 | 0 |
| Richmond | 0.00 | 0.06 | 0 |
| South Bay & Santa Cruz County | | | |
| Ben Lomond | 0.00 | 0.06 | 0 |
| Gilroy | 0.00 | 0.03 | 0 |
| Moffett Federal Airfield | 0.01 | 0.01 | 100 |
| Mount Hamilton | 0.03 | 0.06 | 50 |
| San Jose | 0.02 | 0.02 | 100 |
| Santa Cruz | 0.03 | 0.04 | 75 |
| Watsonville | 0.07 | 0.02 | 350 |
| Watsonville Airport | 0.14 | 0.05 | 280 |
| Monterey and San Benito Counties | | | |
| Big Sur Station | 0.05 | 0.05 | 100 |
| Carmel Valley | 0.06 | 0.03 | 200 |
| Hollister | 0.07 | 0.01 | 700 |
| King City | 0.00 | 0.01 | 0 |
| Monterey | 0.01 | 0.07 | 14 |
| Monterey Airport | 0.04 | 0.04 | 100 |
| Pinnacles National Park | 0.02 | 0.04 | 50 |
| Salinas | 0.05 | 0.04 | 125 |
| Salinas Airport | 0.06 | 0.03 | 200 |

Miscellaneous August Climate Information

| Monthly Ranks for Downtown San Francisco | | |
|------------------------------------------|----------|--------------------------------------------------|
| Average High Temperature | 71.8 deg | 8 th warmest August out of 141 years |
| Average Low Temperature | 60.2 deg | Warmest August out of 141 years |
| Average Temperature | 66.1 deg | 2 nd warmest August out of 141 years |
| Precipitation | 0.02 in | 37 th wettest August out of 165 years |

| Monthly Extremes for Select Locations | | | |
|---------------------------------------|-----------------------------|-----------------------------|----------------------------------|
| Location | Max Temp: Warmest Day(s) | Min Temp: Coolest Day(s) | Precipitation: Wettest Day(s) |
| Sonoma County Airport | 8/16 | 8/09 | 8/29 |
| | 104 degrees | 48 degrees | 0.03 inches |
| San Francisco | 8/16 | 8/10, 8/11, 8/12, 8/26 | 8/11, 8/14 |
| | 90 degrees | 58 degrees | 0.01 inches |
| Livermore Airport | 8/16 | 8/09 | n/a |
| | 106 degrees | 58 degrees | |
| San Jose | 8/16 | 8/09, 8/12 | 8/06 |
| | 97 degrees | 57 degrees | 0.02 inches |
| Salinas Airport | 8/15 | 8/12 | 8/06 |
| | 93 degrees | 54 degrees | 0.06 inches |

Note: Climatological data included in this document is preliminary. For official certified climatological data please contact the National Climatic Data Center at 828-271-4800 or <http://www.ncdc.noaa.gov>.

Official values as determined at the above web site may take several months for authentication and publication.